

# Incorporating the storage and return flow processes of reusable packaging into an already up-and-running warehouse

by Linnea Sjöberg, June 2023

**Reusable packaging is becoming increasingly popular and is connected to cost and resource savings benefits. However, to reap the benefits of having reusable packaging, the reverse supply chain that handles the packaging and the included processes must be clearly defined and managed. When adding a return flow to an already up-and-running warehouse, the processes of the return flows must be aligned with the other processes in the warehouse to keep an efficient flow.**

The thesis discusses Company Alpha and the challenge they are facing in incorporating the return flow processes and storage for reusable packaging. The warehouse in which the processes should be incorporated is the outbound warehouse, where finished goods are packed and shipped to the customers. Consequently, a lot of processes are already taking place in the warehouse, meaning that the return flow processes must be efficient. Additionally, the storage for the reusable packaging needs to be determined. There is limited space in the warehouse, so the storage needs to be space efficient.

When this warehouse was designed, the storage and return flow of the reusable packaging was disregarded, which is why they need to be determined now. To do so, an analytical framework was created consisting of theories within warehouse configuration, warehouse contextual factors, and process mapping. Specifically, a contingency approach to warehouse configuration is discussed. This approach emphasizes that the configuration of a warehouse needs to be matched with

contextual factors in order to achieve a satisfactory warehouse performance. When applying this theory to Company Alpha, propositions for both the return flow processes and the storage of the reusable packaging were generated. However, there were contextual factors and already existing configurations that prevented the solutions to be optimal. The solutions were applicable, and solved the problem short-term, but for a long-term solution, Company Alpha needs to go back to the drawing board.

Determining the configuration of a warehouse can be likened to creating a puzzle, where each contextual factor can be seen as a piece of the puzzle. An already up-and-running warehouse is an already laid puzzle. When adding additional processes to the warehouse, it is like trying to add an additional piece to the already finished puzzle. The puzzle needs to be taken apart, and the shape of the pieces need to be altered to create a somewhat okay full puzzle. It will not be perfect, but good enough. If wanting to create the perfect puzzle, all pieces need to be considered from the beginning, just like when configuring a warehouse.

The popular scientific article is derived from the master thesis: *Configuring the storage and return flow processes of reusable packaging for battery cells*, written by Linnea Sjöberg (2023)